WHAT IS CLAIMED IS:

1. An alternator for use in an automotive vehicle, the alternator comprising:

a housing including a front frame and a rear frame;

a cylindrical stator including an armature coil, the cylindrical stator being contained in the housing;

a rotor rotatably disposed inside the cylindrical stator and supported in the housing;

a rectifier mounted on the rear frame;

a rear cover covering the rectifier, the rear cover being fixed to the housing; and

a cooling fan for introducing cooling air into the housing through air inlets formed on a rear surface of the rear frame after cooling the rectifier, the cooling fan being connected to the rotor, wherein:

the rectifier includes a minus heatsink plate on which minus rectifier elements are mounted and a plus heatsink plate on which plus rectifier elements are mounted, the minus heatsink plate being disposed to face the rear surface of the rear frame forming an air passage therebetween, the plus heatsink plate being disposed to face the rear cover;

a lead terminal led out of each minus rectifier element extends in an axial direction of the rotor toward the rear cover;

the minus heatsink plate includes cooling fins extending in the axial direction and forming radial air passages between the cooling fins; and

the rear cover includes a plurality of radial openings that are open in a radial direction of the rotor, so that the cooling air is introduced from the radial openings upon rotation of the cooling fan and flows through the radial air passages between the cooling fins and through the air passage between the minus heatsink plate and the rear surface of the rear frame.

2. The alternator for use in an automotive vehicle as in claim 1, wherein:

the radial passages formed between the cooling fins are arranged along radial lines converging to a center of the rotor.

3. The alternator for use in an automotive vehicle as in claim 1, wherein:

a height of the cooling fin in the axial direction is made equal to or larger than a width of the radial opening in the axial direction, so that foreign particles are prevented from entering into the housing from the radial opening.

4. The alternator for use in an automotive vehicle as in claim 1, wherein:

the cooling fins are positioned radially outside of an outer periphery of the plus heatsink plate.

5. The alternator for use in an automotive vehicle as in claim 1, wherein:

the air passage between the minus heatsink plate and the rear surface of the rear frame includes a plurality of ditches formed on the rear surface of the rear frame;

the plurality of ditches are formed along radial lines converging to a center of the rotor and communicates with the air inlets formed on the rear surface of the rear frame; and

an end of the minus rectifier elements is exposed to the ditches so that the rectifier elements are cooled by the cooling air flowing through the ditches.

6. The alternator for use in an automotive vehicle as in claim 5, wherein:

the rear surface of the rear frame, either directly or via heat-conductive grease, contacts the minus heatsink plate at places other than places where the ditches are formed.

7. An alternator for use in an automotive vehicle, the alternator comprising:

a housing including a front frame and a rear frame;

a cylindrical stator including an armature coil, the cylindrical stator being contained in the housing;

a rotor rotatably disposed inside the cylindrical stator and supported in the housing;

a rectifier mounted on and contained in the housing;

a separating wall separating the rectifier from the rotor in the axial direction; and

a cooling fan for sucking cooling air through air inlets formed on the separating wall after cooling the rectifier, the cooling fan being connected to the rotor, wherein:

the rectifier includes an outer heatsink plate on which rectifier elements are mounted and an inner heatsink plate on which other rectifier elements are mounted, the outer heatsink plate being disposed to face the separating wall forming an air passage therebetween, the inner heatsink plate being disposed to face the rear frame;

the outer heatsink plate includes cooling fins extending toward the rear frame in the axial direction and forming radial air passages between the cooling fins; and

the rear frame includes radial openings that are open in a radial direction of the rotor, so that the cooling air is introduced from the radial openings upon rotation of the cooling fan and flows through the radial air passages between the cooling fins and through the air

passage between the outer heatsink plate and the separating wall.

8. The alternator for use in an automotive vehicle as in claim 7, wherein:

the radial passages formed between the cooling fins are arranged along radial lines converging to a center of the rotor.

9. The alternator for use in an automotive vehicle as in claim 7, wherein:

the cooling fins are positioned radially outside of an outer periphery of the inner heatsink plate.

10. The alternator for use in an automotive vehicle as in claim 7, wherein:

the air passage between the outer heatsink plate and the separating wall communicates with the air inlets formed on the separating wall.

11. An alternator for use in an automotive vehicle, the alternator comprising:

a housing including a front frame and a rear frame;

a cylindrical stator including an armature coil, the cylindrical stator being contained in the housing;

a rotor rotatably disposed inside the cylindrical stator and supported in the housing;

a rectifier mounted on the rear frame;

a rear cover covering the rectifier, the rear cover being fixed to the housing; and

a cooling fan for introducing cooling air into the housing through air inlets formed on a rear surface of the rear frame after cooling the rectifier, the cooling fan being connected to the rotor, wherein:

the rectifier includes a minus heatsink plate on which minus rectifier elements are mounted and a plus heatsink plate on which plus rectifier elements are mounted, the minus heatsink plate being disposed to face the rear surface of the rear frame, the plus heatsink plate being disposed to face the rear cover;

a lead terminal led out of each minus rectifier element extends in an axial direction of the rotor toward the rear cover;

the minus heatsink plate includes cooling fins standing therefrom toward the rear cover in the axial direction and forming radial air passages between the cooling fins;

the minus heatsink plate further includes second cooling fins standing therefrom toward the rear frame in the axial direction and forming second radial air passages between the second cooling fins; and

the rear cover includes a plurality of radial openings that are open in a radial direction of the rotor, so that the cooling air is introduced from the radial

openings upon rotation of the cooling fan and flows through the radial air passages between the cooling fins and through the second radial air passages between the second cooling fins.

12. The alternator for use in an automotive vehicle as in claim 11, wherein:

the cooling fins are positioned radially outside of an outer periphery of the plus heatsink plate.

13. The alternator for use in an automotive vehicle as in claim 11, wherein:

the cooling fins are positioned radially outside of the minus rectifier element mounted on the minus heatsink plate.

14. The alternator for use in an automotive vehicle as in claim 11, wherein:

a height of the cooling fin in the axial direction is made equal to or larger than a width of the radial opening in the axial direction, so that foreign particles are prevented from entering into the housing from the radial opening.

15. The alternator for use in an automotive vehicle as in claim 11, wherein:

the rear cover further includes a plurality of axial openings that open to the axial end of the rear cover; and

the cooling fins are positioned to face the radial openings.

16. The alternator for use in an automotive vehicle as in claim 15, wherein:

a height of the cooling fin in the axial direction is made equal to or larger than a width of the radial opening in the axial direction, so that foreign particles are prevented from entering into the housing from the radial opening.

17. The alternator for use in an automotive vehicle as in claim 11, wherein:

the second cooling fins are positioned around the minus rectifier elements mounted on the minus heatsink plate.

18. The alternator for use in an automotive vehicle as in claim 11, wherein:

the second cooling fins are positioned between the minus rectifier element and a mounting hole for mounting the minus heatsink plate on the rear frame.

19. The alternator for use in an automotive vehicle as in claim 11, wherein:

at least either the cooling fins or the second cooling fins are formed with an angle slanted toward a rotational direction of the rotor, viewed from an outer periphery of the minus heatsink plate.

20. The alternator for use in an automotive vehicle as in claim 11, wherein:

at least either the cooling fins or the second cooling fins are formed in parallel to one another thereby forming parallel air passages therebetween.

21. The alternator for use in an automotive vehicle as in claim 11, wherein:

at least either the cooling fins or the second cooling fins are formed in a zigzag shape with respect to the radial direction.

22. An alternator for use in an automotive vehicle, the alternator comprising:

a housing including a front frame and a rear frame;

a cylindrical stator including an armature coil, the cylindrical stator being contained in the housing;

a rotor rotatably disposed inside the cylindrical stator and supported in the housing;

a rectifier mounted on the rear frame;

a rear cover covering the rectifier, the rear cover being fixed to the housing; and

a cooling fan for introducing cooling air into the housing through air inlets formed on a rear surface of the rear frame after cooling the rectifier, the cooling fan being connected to the rotor, wherein:

the rectifier includes a minus heatsink plate on which minus rectifier elements are mounted and a plus heatsink plate on which plus rectifier elements are mounted, the minus heatsink plate being disposed to face the rear surface of the rear frame forming an air passage therebetween, the plus heatsink plate being disposed to face the rear cover;

the rear surface of the rear frame contacts the minus heatsink plate at places where the air passage between the rear frame and the minus heatsink plate is not formed;

the air passage between the rear frame and the minus heatsink plate is composed of a plurality of ditches formed on the rear surface of the rear frame, and an end of the minus rectifier elements is exposed to the ditches so that the rectifier elements are cooled by the cooling air flowing through the ditches;

a lead terminal led out of each minus rectifier element extends in an axial direction of the rotor toward the rear cover;

the minus heatsink plate includes cooling fins extending in the axial direction and forming radial air passages between the cooling fins; and

the rear cover includes a plurality of radial openings that are open in a radial direction of the rotor, so that the cooling air is introduced from the radial openings upon rotation of the cooling fan and flows through the radial air passages between the cooling fins and through the air passage between the minus heatsink plate and the rear surface of the rear frame.

23. The alternator for use in an automotive vehicle as in claim 22, wherein:

at least either the cooling fins or the ditches formed on the rear frame are formed with an angle slanted toward a rotational direction of the rotor, viewed from an outer periphery of the minus heatsink plate.

24. The alternator for use in an automotive vehicle as in claim 22, wherein:

the rear surface of the rear frame, either directly or via heat-conductive grease, contacts the minus heatsink plate at places where the ditches are not formed.

25. An alternator for use in an automotive vehicle, the alternator comprising:

a housing including a front frame and a rear frame;

a cylindrical stator including an armature coil, the cylindrical stator being contained in the housing;

a rotor rotatably disposed inside the cylindrical stator and supported in the housing;

a rectifier mounted on and contained in the housing;

a separating wall separating the rectifier from the rotor in the axial direction; and

a cooling fan for sucking cooling air through air inlets formed on the separating wall after cooling the rectifier, the cooling fan being connected to the rotor, wherein:

the rectifier includes an outer heatsink plate on which rectifier elements are mounted and an inner heatsink plate on which other rectifier elements are mounted, the outer heatsink plate being disposed to face the separating wall forming an air passage therebetween, the inner heatsink plate being disposed to face the rear frame;

the outer heatsink plate includes cooling fins standing from the outer heatsink plate toward the rear frame in the axial direction and forming radial air passages between the cooling fins; and

the outer heatsink plate further includes second cooling fins standing from the outer heatsink plate and extending into the air passage between the outer heatsink plate and the separating wall; and

the rear frame includes radial openings that are open in a radial direction of the rotor, so that the cooling air is introduced from the radial openings upon rotation of the cooling fan and flows through the radial air passages between the cooling fins and through the air passage between the outer heatsink plate and the separating wall.

26. The alternator for use in an automotive vehicle as in claim 25, wherein:

the radial passages formed between the cooling fins are arranged along radial lines converging to a center of the rotor.

27. The alternator for use in an automotive vehicle as in claim 25, wherein:

the cooling fins are positioned radially outside of an outer periphery of the inner heatsink plate.

28. The alternator for used in an automotive vehicle as in claim 25, wherein:

the radial openings formed on the rear frame communicate with the air inlets formed on the separating wall through the air passage between the outer heatsink plate and the separating wall.

29. An alternator for use in an automotive vehicle, the alternator comprising:

a housing including a front frame and a rear frame;

a cylindrical stator including an armature coil, the cylindrical stator being contained in the housing;

a rotor rotatably disposed inside the cylindrical stator and supported in the housing;

a rectifier mounted on the rear frame;

a rear cover covering the rectifier, the rear cover being fixed to the housing; and

a cooling fan for introducing cooling air into the housing through air inlets formed on a rear surface of the rear frame after cooling the rectifier, the cooling fan being connected to the rotor, wherein:

the rectifier includes a minus heatsink plate on which minus rectifier elements are mounted and a plus heatsink plate on which plus rectifier elements are mounted, the minus heatsink plate being disposed to face the rear surface of the rear frame, the plus heatsink plate being disposed to face the rear cover;

a lead terminal led out of each minus rectifier element extends in an axial direction of the rotor toward the rear cover;

the rear cover includes radial openings that are open in a radial direction of the rotor and axial openings that are open in an axial direction of the rotor; and

the minus heatsink plate includes at least first cooling fins standing from the minus heatsink plate toward a rear side of the alternator in the axial direction or second cooling fins standing from the minus heatsink plate toward a front side of the alternator in the axial direction, and the first and the second cooling fins are positioned to face the radial openings of the rear cover.